

ABSTRACT OF THE DISCLOSURE

Fuel mixtures for direct methanol fuel cells are disclosed. The fuels include methanol and additives that react with water to produce methanol and other easily electro-oxidizable compounds including dimethyloxymethane, methylorthoformate, tetramethylorthocarbonate, trimethylborate, and tetramethylorthosilicate. Other additives to improve safety and efficiency of the fuel cell include sulfonated activated carbon particles and metal hydrides, such as LiAlH_4 , NaBH_4 , LiBH_4 , $(\text{CH}_3)_2\text{NHBH}_3$, NaAlH_4 , B_2H_6 , NaCNBH_3 , CaH_2 , LiH , NaH , KH or sodium bis (2-methoxyethoxy) dihydridaluminumate.